Unit 1: Problem Solving

Short Questions

Q.1 In a farm there are some cows and birds. If there are total 35 heads and 110 legs then how many cows and birds are there?

Ans:

Algorithm

- Each bird has 1 head and 2 legs and cow has 1 head and 4 legs.

Step 1: Start
Step 2: Suppose number of cows are x and birds are y.
Step 3: Total number of heads are 35 then x + y = 35
Step 4: Total legs are 110 then 4x + 2y = 110
Step 5: Multiply step 3 by 2 then 2(x + y) = 35 x 2 so 2x + 2y = 70
Step 6: Subtract step 5 from step 4 so 4x + 2y = 110- 2x + 2y = 70 so become 2x = 40 the value of X= 20
Step 7: Put value of x = 20 in equation x + y = 35 so value of y becomes 15
Step 8: So total number of cows are 20 and total number of birds are 15

Algebraic Form

Let no of cows = x
Let no of birds = y
Total heads = 35
Then x + y = 35 ------- (i)
Total legs = 110
Then 4x + 2y = 110 ------ (ii)
Multiply equation (i) by "2"
2(x + y) = 35 x 2
2x + 2y = 70 -------- (iii)
Subtraction equation (iii) from (ii)

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 4x+2y  = 110
 2x + 2 y = 70
-    -      -
 2x       = 40
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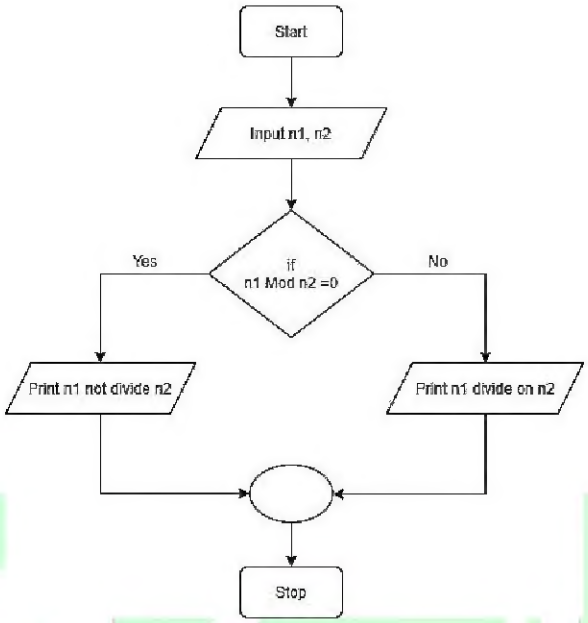
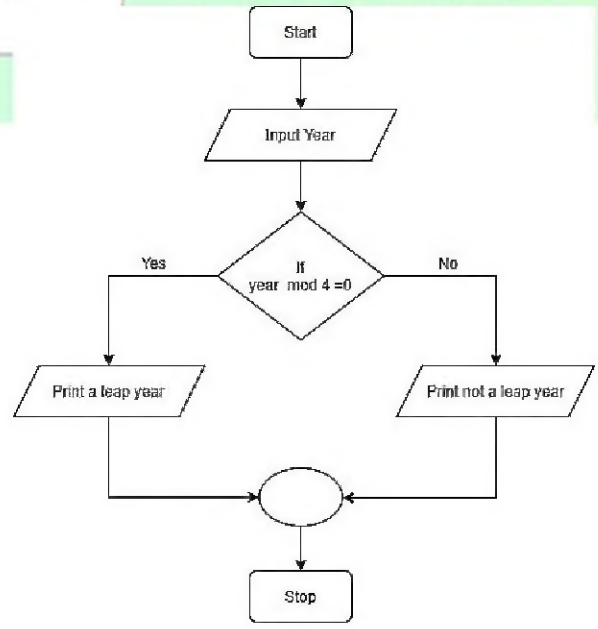
X = 40/2
X = 20
Put x = 20 in equation (i)
X + y = 35
20+ y = 35
Y = 35 - 20
Y = 15

So number of cows x = 20
So number of birds y = 15

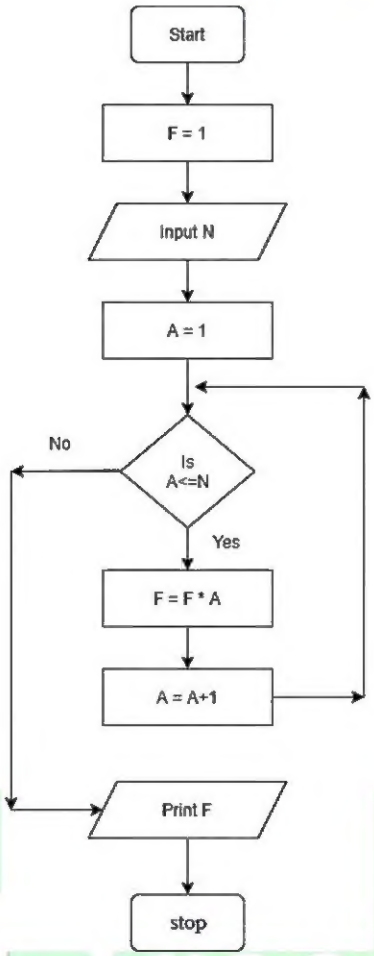
Q.2 Draw a flowchart that Input two numbers n1 and n2. Determine whether n1l divides n2 or not.
Ans:



Q.3 Draw a flowchart that Input a year and determine whether it is a leap year or not.
Ans:

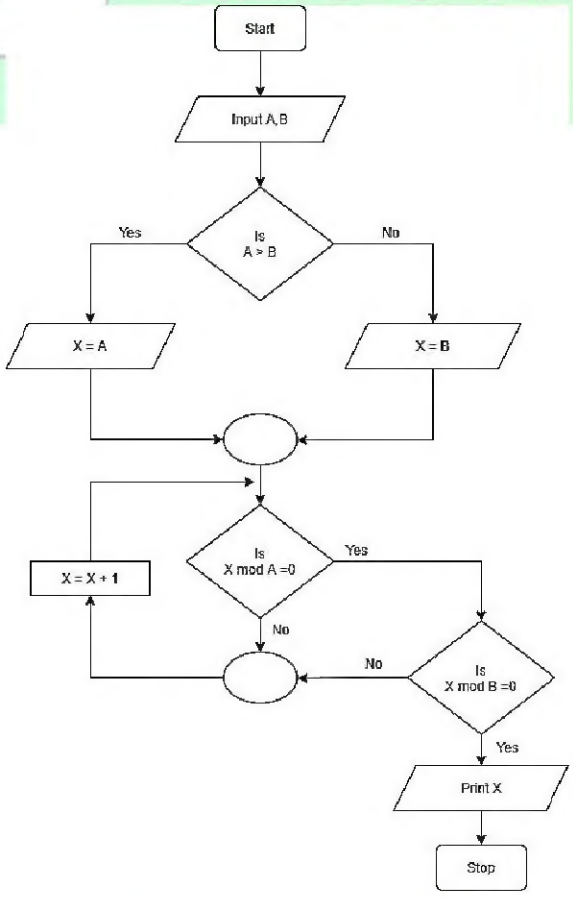


Q.4 Draw a flowchart that Input a number and calculate its factorial.
Ans:



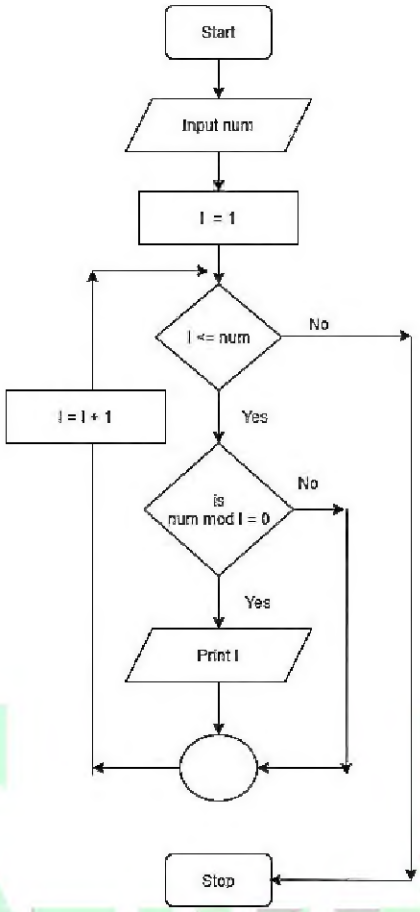
Q.5 Draw a flowchart to find LCM (Least Common Multiple) of two numbers.

Ans:



Q.6 Draw a flowchart that Input a number and display its factors.

Ans:



Q.7 Define problem and problem solving.

Ans:

Problem:

A problem is an obstacle, hurdle, difficulty or challenge, or any situation that needs to be removed or solved.

Problem solving:

Problem-solving is a skill which can be developed by following a well-organized approach. Programming is also a problem solving activity. Problem Solving is the main task of computer science which is the job of computer programmer.

Q.8 List the problem solving steps.

Ans:

The following five steps are involved in problem solving

1: Defining a Problem
2: Understanding a Problem.
3: Planning a Solution.
4: Defining Candid Solutions.
5: Selecting the Best Solution

Q.9 What do you mean by define the problem? Mention strategies.

Ans:

Defining the problem is initial stage of problem solving. A well-defined problem is the one that does not contain any ambiguities. When we are going to solve some problem first we need to see whether the problem is defined well or not. If the problem is not defined well first of all define the problem. If the problem is not well defined then use the following are strategies to define the problem:

- Gain Background Knowledge.
- Use Guesses.
- Draw a Picture.

Q.10 What do you mean by well-defined problem?

Ans:

A well-defined problem is the one that does contain ambiguities. All the conditions are clearly specified and it has a clear goal. It is easy to understand and solve.

Q.11 What do you know understanding the problem or analyzing a problem?

Ans:

The process of understanding the problem for developing its solution is called analyzing the problem. It is important to understand the problem before jumping into the solution of the problem. Understanding of a problem usually includes identification of the 5 Ws (what, who, when, where, and why).

Q.12 Give one example of understanding the problem by using 5 Ws?

Ans:

Understanding of a problem usually includes identification of the 5 Ws (what, who, when, where, and why).

Example: Suppose your class teacher assigns you a task to prepare a list of students in your school whose names start with letter 'A'. The list is required in order to prepare an alphabetical directory of all school students and there is only one week to complete the task. We can analyse this problem by identifying 5Ws in the problem statement as given below:

- **What**: List of students names starting with letter 'A'.
- **Who**: Students.
- **Why**: To prepare the directory of students.
- **When**: Within a week.
- **Where**: School.

Q.13 What do you mean by planning a solution? Mention strategies for problem solving.

Ans:

Planning the solution of the problem is a creative stage of problem solving. It refers to dividing the solution into steps and arranging them into proper order that will solve the problem

- Divide and conquer
- Guess, Check and Improve
- Act it Out
- Prototype (Draw)

Q.14 Define Candid Solutions

Ans:
The word candid refers to something spontaneous and unplanned. All the possible solutions of a problem that produce estimated result are known as candid solutions. To find candid solutions of a problem programmer has to look for different methods to solve the problem and come up with several solutions. It is not necessary that candid solution is the actual solution of the problem.

Q.15 What do you mean by selecting the best solution?
Ans:
After defining the candid solutions, only one solution can be selected. The selection of final solution of a problem should be based on the following criteria.
Speed: The selected solution of the problem should be efficient.
Cost: The selected solution of the problem should provide a cost-effective way of implementation.
Complexity: The selected solution of the problem should not be complicated. It should contain minimum number of instructions / simple steps.

Q.16 What is Gain Background knowledge to define the problem.
Ans:
We try to know the situation and circumstances in which the problem is happening. In this way, we can identify the given state. It also helps to know what a good solution will look like. How we shall be able to measure the solution.

Q.17 Define the problem by using guesses.
Ans:
We try to guess the unknown information through appropriate guesses. These guesses may be based upon our past experiences.

Q.18 Define "Draw a picture" strategy for well-defined problem.
Ans:
If the problem is not well-defined, we can draw a picture and fill the undefined information.

Q.19 What is top down design or divide and conquer rule?
Ans:
At this stage the problem is decomposed into sub-problems. Rather on concentrating the bigger problem as a whole, we try to solve each sub-program separately. This leads to a simple solution. This technique is known as top down design (also called divide and conquer rule).

Q.20 Define Algorithm and flowchart.
Ans:
Algorithm:
An algorithm is a finite set of steps, which, if followed, accomplish a particular task. It is written in natural language for human understanding.
Flowchart:
Flowchart is the graphical or visual representation of an algorithm to solve problem using symbols.

Q.21 What is the purpose of oval shape / Terminal shape symbol in flowchart?

Ans:

An oval shape symbol that represents the Start or End of a flowchart.

Q.22 What is the purpose of Input/Output Symbol in flowchart?

Ans:

A parallelogram represents either input or output operation regardless of the input or output method.

Q.23 What is the purpose of Rectangle symbol in flowchart?

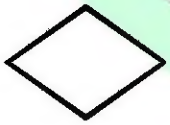
Ans:

Rectangle shape symbol is used to represent the process or action taken or shows all the calculations and store results.

Q.24 What is the purpose of Diamond symbol in flowchart?

Ans:

A diamond represents a decision symbol used for comparison or a decision. It changes the flow of control and computer decides a particular path to be followed.



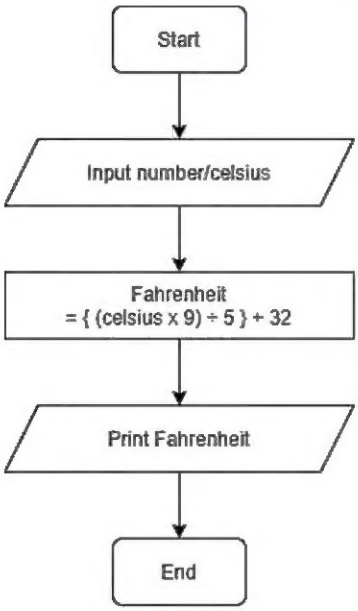
Q.25 What is the purpose of Connector symbol in flowchart?

Ans:

A small circle represents a connector symbol and is used to join various parts of a Flow chart.

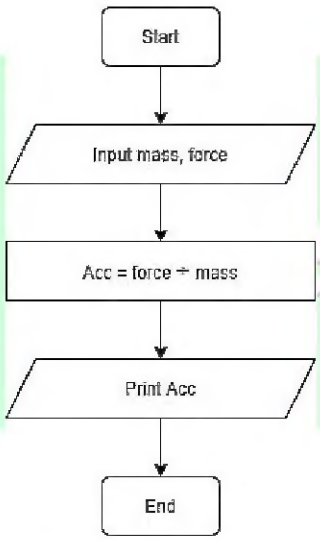
Q.26 Draw a flowchart to convert Celsius (Centigrade) to Fahrenheit temperature.

Ans:



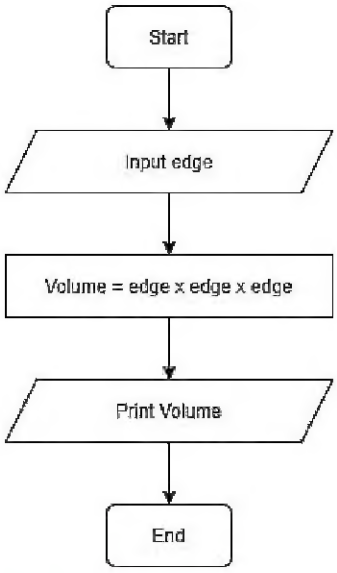
Q.27 Draw a flowchart to find acceleration of moving objects with given mass and the force.

Ans:



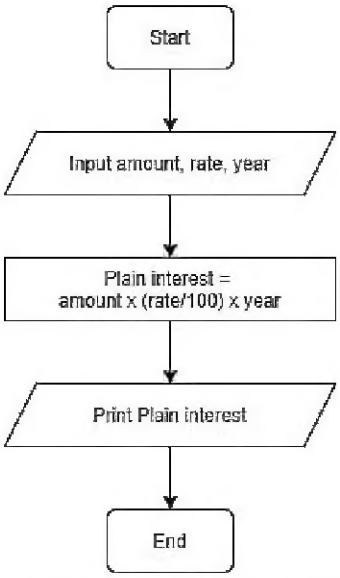
Q.28 Draw a flowchart to find the volume of cube.

Ans:



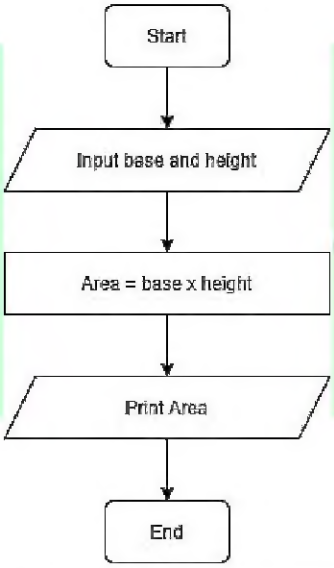
Q.29 Draw a flowchart to find plain interest on an amount.

Ans:



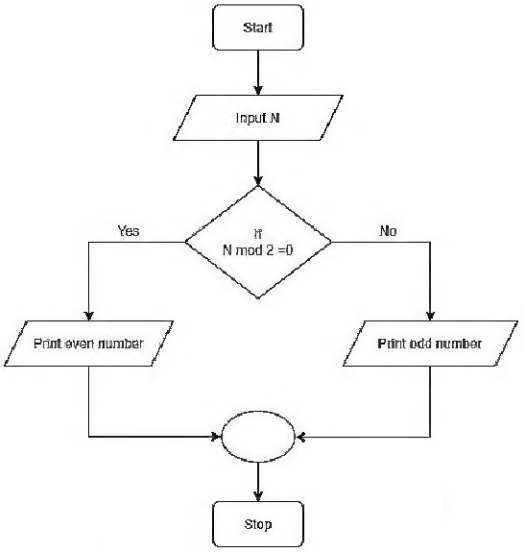
Q.30 Draw a flowchart to find the area of a parallelogram.

Ans:



Q.31 Draw a flowchart to determine whether a given number is odd or even.

Ans:



Q.32 What is role of algorithm in problem solving?

Ans:

The Role of algorithm in problem solving is as follows:

- An algorithm has a vital role in problem solving as it provides a step-by-step guide to the problem solver.
- Computer programming is the process of taking an algorithm and coding it in a programming language.
- Formulating an algorithm is the first step for developing a computer program

Q.33 How we measure the efficiency of an algorithm?

Ans:

The efficiency of an algorithm is measured on the basis of two metrics:

1. Number of steps: An algorithm must be considered efficient if it takes less number of steps to reach the results.

2. Space used in computer memory: An algorithm using less space in computer memory is considered more efficient with respect to memory space.

Q.34 What is Test Data? Give example.

Ans:

Test data is data which has been specially identified for use in test, typically of computer program. After solving a problem, we need to test whether the solution is correct or not, and for testing, we need "Test Data".

Example: If we want to test the algorithm to find the largest among three given numbers a, b and c, then we need three values. These values can be positive, negative or zero, e.g., (a = 100, b = 200, c = 30), (a =22, b = -45, c = 38). (a = 14, b = 0, c = 10), etc. So, for thinking about testing, we also need to think about test data.

Q.35 Why test data is important?

Ans:

After solving a problem, we need to test whether the solution is correct or not, and for testing, we need Test Data. Test data helps to point out the defects and errors made during finding a solution to some problem. By using test data we improve the solution of the problem.

Q.36 What is Valid and Invalid test data?

Ans:

Valid test data is data that is valid with the input requirement of the algorithm while Invalid test data is data that is invalid with the input requirement of the algorithm.

Q.37 Compare verification and validation.

Ans:

Verification means to test if the solution is actually solving the same problem for which it was designed while Validation means to test whether the solution is correct or not.

Q.38 What is a Trace Table?

Ans:
A trace table is a technique used to test algorithms, in order to make sure that no logical errors occur while the algorithm is being processed.

Q.39 What happen if you give invalid data for testing the algorithm? Give example.
Ans:
When you give invalid data as input to the algorithm during testing process then algorithm gives you unexpected output. Testing an algorithm using invalid data ensures that the algorithm can gracefully handle unexpected data inputs.
Example: If an algorithm is supposed to take a numeric value between 1 and 50 as input, but that input is not between 1 to 50 so it is invalid test data.

Q.40 Which thing you first see when problem statement is given?
Ans:
When we solve a problem statement, first we need to see whether the problem is defined well or not.

Q.41 What happens if your algorithm is failed during verification?
Ans:
If an algorithm is failed during verification, then it is important to identify the root cause of failure and then to correct it. Sometimes the error is logical. It means the solution is working but not giving required results.

Q.42 What are advantages of flowchart?
Ans:
Some advantages of flowchart are following:

- Easy to draw.
- Easy to understand problem solving.
- Easy to identity errors (if any).
- Easy to observe flow from one step to the other.

Q.43 What are disadvantages of flowchart?
Ans:
Following are some disadvantages of flowchart:

- More time is required to draw a flowchart.
- Modifying a flowchart is not very easy every time.
- It is not suitable for very large and complex problems.

Q.44 What are advantages of algorithm?
Ans:
Some advantages of algorithm are following:

- Easy to write.
- Techniques to write an algorithm are easy to understand.
- To solve a large problem, algorithms are helpful.

Q.45 What are disadvantages of algorithm?

Ans:

Some disadvantages of algorithm are following:

- Modifying an existing algorithm is not very easy every time.
- Showing the flow from one step to the other is not very easy.
- Usage of goto makes it difficult to identify errors

Q.46 What do you mean by Boundary test data values?

Ans:

A solution is tested on extreme values.

Example: To calculate interest we consider principal amount as 0 or a very huge amount.

Q.47 What do you mean by Absent data?

Ans:

It is also important to investigate that the solution still works if less number of inputs are given than expected. Example: If a system asks to enter driving license number, then everyone cannot provide this information. It is important to see how the system reacts in such situations.

Q.48 What do you mean by. Wrong data format?

Ans:

It is to check how the system reacts on entering data in wrong format.

Example: Giving a numeric value as input when alphabet is expected.

Q.49 Write any two criteria for selection of final solution of a problem.

Ans:

Two criteria are following:

Speed: When the solution is implemented in a programming language, the program should run fast.

Cost: The selected solution of the problem should provide a cost-effective way of implementation

Q.50 What do you know about Act it Out strategy?

Ans:

In this strategy the designer defines the list of "to-do" tasks. Afterwards he she performs the task.

Q.51 What do you know about Prototype (Draw)?

Ans:

This technique draws a pictorial representation of the solution. It is not the final solution. However, it may help a designer to understand the important components of the solution.

Q.52 What are the tasks performed by most of the flowchart? OR List steps for drawing a flowchart.

Ans:

Mostly flowchart performs following tasks.

- Input to the flowchart
- Type of processing required
- Decisions to be taken
- The output to be produced after processing

Q.53 How to plan a solution using guess, check and improve strategy?

Ans:

- The designer guesses a solution to a problem
- Checks the correctness of the solution.
- If the solution is not according to expectations, then he she refines the solution the refinement is an iterative process.

Unit 2: Binary System

Short Questions

Q.1 Convert $(69610)_{10}$ to Hexadecimal.

Ans:

16	69610	
16	4350 - 10 = A	↑
16	271 - 14 = E	↑
16	16 - 15 = F	↑
16	1 - 0	↑

$(69610)_{10}$ $(10FEA)_{16}$

Q.2 Differentiate between volatile and non-volatile memory.

Ans:

Volatile memory	Non-volatile memory
In Volatile memory data is not stored permanently. Data is present till power supply is present.	In Non-Volatile memory data is stored permanently. Data remains even power supply is not present.
Expensive and Small capacity.	Cheap and Large capacity
Fast access.	Slow access
Example: RAM is an example of Volatile memory.	Examples: ROM, Hard Disk, Flash Drives and memory cards etc. are some examples of Non-Volatile memory
In Volatile memory data is not stored permanently. Data is present till power supply is present.	In Non-Volatile memory data is stored permanently. Data remains even power supply is not present.

Q.3 Store the word "Phone" in computer memory starting from address 7003 where each letter needs one byte to store in the memory.

Ans:

Human's View about Memory	Code in Decimal	Code in Binary	Address
'P'	80	01010000	7003

'h'	104	01101000	7004
'o'	111	O1101111	7005
'n'	110	O1101110	7006
'e'	101	01100101	7007

Q.4 Differentiate between temporary memory and permanent storage.
Ans:

Temporary Memory	Permanent Storage
Temporary memory is also called volatile.	Permanent storage is also called non-volatile.
In temporary memory data is not stored permanently. Data is present till power supply is present.	In Permanent storage data is stored. Data remains even power supply is not present.
Temporary storage are mostly faster than permanent storage.	Permanent storage are mostly slower than temporary memory.
Example: RAM is an example of temporary Storage.	Examples: Floppy disk, Hard Disk, Flash Drives and memory cards etc. are some examples of Permanent storage.
Temporary memory is also called volatile.	Permanent storage is also called non-volatile.
In temporary memory data is not stored permanently. Data is present till power supply is present.	In Permanent storage data is stored. Data remains even power supply is not present.

Q.5 Write the truth table for X AND Y where
X = It is sunny Y = Today is Monday
Ans:

X – It is sunny
Y – Today is Monday
X AND Y – It is sunny AND Today is Monday

X	Y	X AND Y
F	F	F
F	T	F
T	F	F
T	T	T

Q.6 Convert $(ABCD)_{16}$ to binary.
Ans:

Hexa	Binary
A	1010
B	1011
C	1100

D 1101

$(ABCD)_{16} = (1010101111001101)_2$

Q.7 Convert $(0010110010001101001)_2$ to hexadecimal.

Ans:

Binary	Hexa
1001	9
0110	6
0100	4
0110	6
0001	1

$(0010110010001101001)_2 = (16469)_{16}$

Q.8 What is number system?

Ans: A number system is the system for representation of numeric data. A Number system is defined as a set of values used to represent different quantities. We all are familiar with decimal number system where each number consists of digits from 0 to 9. In a computer system, other number systems are also used. E.g. Binary, Hexadecimal etc.

Q.9 What is Decimal Number System?

Ans: The number system, which has base 10 and consists of digits from 0 to 9, is called decimal number system. This system is most common in usual mathematics.

Example: $897_{(10)}$, $9876_{(10)}$ etc.

Q.10 Describe Binary Number System.

Ans: The number system which has base 2 and uses only two digits 0 and 1 to represent any quantity. These digits are called Binary digits or BIT. Examples: $1101_{(2)}$, $11101_{(2)}$ etc.

Q.11 What is hexadecimal number system?

Ans: The base of hexadecimal number system is 16. This number system uses sixteen different digits (0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F).

Where A = 10, B = 11, C = 12, D = 13, E = 14, F = 15

Example: $758_{(16)}$, $3A4_{(16)}$ etc.

Q.12 What do you mean by conversion of number system?

Ans: A process to convert one number system to another number system is called conversion of number system. For example, converting a decimal number to binary number.

Q.13 Convert $0B9_{(16)}$ into decimal.

Ans:

$$0B9_{(16)} = 0 \times 16^2 + B \times 16^1 + 9 \times 16^0$$
$$= 0 \times 16^2 + 11 \times 16^1 + 9 \times 16^0$$
$$= 0 \times 256 + 11 \times 16 + 9x1$$
$$= 0 + 176 + 9$$
$$= 185_{(10)}$$

Q.14 Convert $(100000)_2$ to decimal.

Ans:

$1x2^5 + 0 \times 2^4 + 0x2^3 + 0x\ 2^2 + 0 \times 2^1 + 0 \times 2^0$

$32 + 0 + 0 + 0 + 0 + 0$

$(32)_{10}$

Q.15 Convert $(C921)_{16}$ to decimal.

Ans:

$C \times 16^3 + 9 \times 16^2 + 2x\ 16^1 + 1 \times 16^0$

$12 \times 16^3 + 9x16^2 + 2 \times 16^1 + 1 X\ 16^0$

$12 \times 4096 + 9 \times 256 + 2 \times 16 + 1 \times 1$

$49152 + 2304 + 32 + 1$

$(51489)_{10}$

Q.16 What is computer memory? Also write its types.

Ans: Computer memory is used to store programs and data. There are two types of computer Storage.

1. Volatile Memory (Primary Memory)
2. Non-Volatile Memory (Secondary Storage)

Q.17 What is a storage device?

Ans: Any computing hardware that is used for storing, porting and extracting data, is called a storage device. It can hold or store information both temporarily and permanently. It can also be internal or external to a computer.

Examples: RAM, ROM, USB Flash drive etc.

Q.18 What is the difference between internal storage and external storage?

Ans: Internal storage: Internal storage are located on motherboard. Internal storage devices are connected to some fixed slots. To attach an internal storage device we need to turn off the computer. Examples: RAM, ROM, Hard disk etc.

External storage: External storage is plug it into and start using it without turning off a computer. These devices are plug and play. Examples: Portable Hard Disk, USB Flash Drive etc.

Q.19 How data is represented in computer memory?

Ans: Digital computers store data in binary form. It means that whether it is a text, picture, movie or some application, it is stored in computer's memory in the form of 0s and 1s. All the characters on your keyboard has an associated code in binary. This code is called ASCII code of the character

Q.20 What is ASCII?

Ans. ASCII (American Standard Code for Information Interchange) is one such coding scheme published by ISO (International Standards Organization). It is 7-bit coding scheme. The codes are assigned to various characters. Most computers also use 8-bit ASCII code.

Example: A = 65, B = 66 and a = 97 etc.

Q.21 What is the difference between Memory and Storage?

Ans:

Memory	Storage
• It is called primary memory.	• It is called secondary memory.
• Connected directly to the processor	• Not directly connected to the processor
• Expensive and Small capacity	• Cheap and Large capacity.
• Examples: RAM and ROM.	• Examples: Floppy disk, hard disk etc.

Q.22 What is bit and why binary number system is important for our computer?

Ans: Bit stands for Binary Digit. A bit is the smallest unit of data and has value 1 or 0 representing ON or OFF state.

Computer understands only machine language, which consists of binary codes 0 and 1. So binary number system is very important for our computer.

Q.23 What is byte or character?

Ans: A collection of 8 bits is called a byte. It is a set of bits, which represents a particular character or symbol. In memory one byte can store only one character.

Q.24 What is Boolean proposition? Give some examples.

Ans: Statements, which are either true or false, such statements are called propositions.

For example, the following sentences are propositions.

- "Someone from our school can join Pakistani Cricket Team"
- "I will get A+ grade in board exam"

But the following sentences are not propositions;

- How are you?
- Close the door?

Q.25 What is compound proposition?

Ans: Sometimes we assemble more than one propositions to make one proposition called a compound proposition.

Example: If we have the following two propositions:

1. Today is Monday.
2. I am in school

Then "Today is Monday AND I am in school" is a compound proposition: Truth value of the compound proposition depends upon the truth values of the individual propositions and the logical operator used to connect the propositions. In this example "AND" is a logical operator.

Q.26 What is a truth table?

Ans: A truth table is used to check whether a proposition is True or False. Usually it is used to check the truth value of a proposition where some logical operator is used.

Q.27 What is AND operator?

Ans: AND operation is used for logical multiplication. AND operator can also be denoted by a **dot "."** symbol. It means that P AND Q may also be written as P.Q. If we use "AND" operator

to connect two or more propositions, then the compound proposition is true only if all the connected propositions are true.

Truth table:

P	Q	P AND Q
F	F	F
F	T	F
T	F	F
T	T	T

Q.28 What is OR operator?

Ans: OR operation is used for logical addition, OR operator can also be denoted by a **plus "+"** symbol. In OR operator, the compound proposition is true if at least one proposition is true. In other words, the compound proposition is false only if all the propositions are false. It means that P OR Q may also be written as P + Q.

Truth table:

P	Q	P OR Q
F	F	F
F	T	T
T	F	T
T	T	T

Q.29 What is NOT operator?

Ans: NOT operator is an inverter operator. NOT is used to negate a proposition. It reverses the 'F' to 'T' and 'T to 'F'. Not operator can also been denoted by a "¬" symbol. It means that NOT(P) may also be written as ¬ P.

Truth table:

P	NOT(P)
F	T
T	F

Q.30 What are truth value? Give examples.

Ans: Every proposition takes one of two values true or false, and these values are called the truth values. Truth value is given on the basis of truthfulness or falsity of a proposition.

Example:

Assume Q = "Lahore is the capital of Punjab". You can assign the truth value true to this proposition. Now assume another proposition P = "Lahore is the capital of Pakistan". The truth value for this proposition is false. If we have proposition R = "I have completed my homework", then the truth value depends on the person who is assigning it. If a person has completed his homework then he can assign truth value true, otherwise false.

Q.31 What is truth table for complex Boolean expression?

Ans: We can make truth table for any combination of operators. For example, if we need to make a truth table of "It is not raining AND today is Sunday". It means the proposition NOT(P) AND Q.

The truth table for this compound proposition is shown in Table:

P	NOT(P)	Q	NOT(P) AND Q
F	T	F	F
F	T	T	T
T	F	F	F
T	F	T	F

Q.32 What is a logical expression?

Ans: We get a logical expression when some logical operator is applied to the Boolean propositions.

Example: For example P AND Q, (P OR Q) etc.

Unit 3: Networks

Short Questions

Q: 1 Describe computer network?

Ans: A number of computers connected together to communicate with each other through communication medium is called the computer network.

Q: 2 What is network of networks? OR what is internet?

Ans: networks are connected together to make a larger network which is called network of networks or internet.

Q: 3 Why do we need computer network? Give name of reasons.

Ans: The main need of computer network is sharing resources. The computer connected in a network can exchange information and data. A computer in a network can also use resources of other computers connected to the network. Some examples of resources sharing given below:

- File sharing.
- Hardware sharing
- Application sharing
- Sharing a single internet connection
- User communication

Q: 4 What is Client?

Ans: A client is a less powerful computer as compared to server computer. It relies on servers for resources, such as files, devices, and even processing power. Clients are computers in a network that access services made available by a server.

Q: 5 What is a server?

Ans: Server is a powerful computer that facilitates the whole network by providing variety of services to the computer or devices, connected to the network. Server is a main computer in a network which is used to manage network resources and facilitate other computers.

Q: 6 How client and server communicate with each other?

Ans: Clients and servers exchange message in a request – response messaging pattern. Client is a program or machine that sends requests to the servers. While a server is a program or a

machine that waits for incoming requests from the client and response according to the request of client. When we access a website, we get contents on our screen served by a server.

Q: 7 In a client-server model, is client software or Hardware? Give reasons to support your answer.

Ans: In general, a client is a Hardware like phone, laptop and desktop computers, but in particular the software running on that Hardware is the process which makes it a client.

Q: 8 What is Network topology? Mention its types.

Ans: Topology of a network is a geometric representation of the relationship among the interconnected devices.

Types: four types of network topologies are:

- Bus topology
- Ring topology
- Star topology
- Mesh topology

Q: 9 What is bus topology?

Ans: In bus topology, all devices are connected to a common communication medium or central cable. The central physical cable that connects the computers is called bus.

Q: 10 How bus topology work?

Ans: A computer sends a message on the bus. The computer to whom the message is sent receives it while others ignore it. At each end of bus a device called terminator is attached so that the signals do not bounce back on the bus causing errors.

Q:11 What is Terminator or endpoints in bus topology?

Ans: In bus topology all of the devices of the network are connected to a common transmission medium which has exactly two endpoints called terminator.

Q: 12 What is Backbone in bus topology?

Ans: A bus topology connects all devices of the network through a single common cable having exactly two endpoints. This cable is called backbone of the topology.

Q: 13 What is star topology?

Ans: A star topology connect all devices using point-to-point connections via cables to a central point. The central point is known as a hub or switch. The central device controls all the traffic. Therefore, devices can transfer data to each other only through the central point.

Q: 14 What is ring topology?

Ans: A ring topology connects a computer with exactly two other computers forming a ring of computers. A computer can send data to its immediate neighbor. A ring can be unidirectional or bidirectional.

Q: 15 What is unidirectional or bi-directional in ring topology?

Ans: A ring can be unidirectional or bidirectional.
Unidirectional: In a unidirectional ring topology, data is sent either clockwise or anticlockwise.
Bidirectional: In a bidirectional ring topology, data can travel in any direction. Upon receiving data, a computer may pass data to its next neighbor.

Q: 16 What is mesh topology?
Ans: Mesh topology connects all devices with each other through a direct link. Message sent on a mesh network, can take any possible path from source to destination. It is not commonly used since it is costly and difficult to implement.

Q: 17 What are the advantages and disadvantages of star topology over bus topology?
Ans: Advantages:
1- Star topology is more reliable and support large numbers of computers than bus topology.
2- It is easy to detect and fix errors than bus topology.
Disadvantages:
1-Lengthy cable is required as compared to bus topology.
2-Star topology is expensive as compared to bus topology.

Q: 18 What happens if failure of connection between two computers in ring topology?
Ans: In ring topology, a failure of connection between two computers may down the whole network.

Q: 19 What is data communication? Mention its components.
Ans: Data communication refers to exchange of messages between sending and receiving devices through some communication medium. Following are the main components of data communication.

- Sender
- Receiver
- Message
- Protocol
- Transmission medium

Q: 20 What is Sender (transmitter) and receiver (sink)?
Ans: Sender: Sender is a device that initiates the communication process. It sends messages consisting of text, numbers, pictures etc. It is also called transmitter.
Receiver: Receiver is a device that receives a message. It is also called sink. The receiver can be a computer, printer on another device. The receiver must be capable of accepting a message.

Q: 21 What is message and packets?
Ans: Message: Message is the data or information to be communicated. It may consist of text, pictures, sound, video or any combination of these.
Packets: In a data communication system, a message is sent in the form of packets. It is unit of data sent from one device to another.

Q: 22 What is payload and control information in a message?

Ans: Each message has two parts, i.e. Payload and control information.

Payload: payload is the actual contents of a message.

Control information: it contains information about the sender and the receiver. Control information is also called header of a message.

Q: 23 What is protocol?

Ans: A protocol is a formal agreement between two parties. A network protocol is a formal arrangement between two computers to send and receive information. Network protocol defines a set of rules and procedures for communication between a sender and a receiver.

Q: 24 What is transmission medium or communication channel?

Ans: Transmission medium is a path or channel through which message is transmitted or received from one location to another in a communication system. It is also called a communication channel. For example copper wire, a fiber optic cable, microwaves etc.

Q: 25 How telephone addressing is related with network addressing?

Ans: When you call your friend you need telephone number of your friend. On the internet, the telephone number corresponds to an IP address (internet protocol). Like a telephone number, all IP addresses are unique.

Q: 26 What is the difference between static and dynamic IP?

Ans: If an IP address of a device is fixed in a network, it is called static IP address. Otherwise if each time a new connection is made a new IP address is assigned, it is called dynamic IP address.

Q: 27 Describe the working of web browser?

Ans: A web browser is software that enables users to retrieve information on the web. Information on the web is accessed by the URLs. Web browser and Web servers function together as a client -server system.

Q: 28 What is the difference between point to point and multipoint connection?

Ans: Point to point connection:

A point to point connection is a direct link only between two devices, i.e., a sender and a receiver.

Example: there is a point to point connection between a remote control and a TV.

Multi-point connection:

In multi-point connection, there is a link between a sender and multiple receivers. So, more devices can share a single link.

Example: in a Wi-Fi-based network a single link is shared among multiple devices.

Q: 29 What is application sharing? Answer with the help of an example.

Ans: Application software can be installed on a server and shared over the network. It means that more than one users may use the same application.

Example: for example, in a bank; cashier manager, ATM (automated teller machine) users use same application over the network. Bank balance updated at one point is updated for all branches immediately.

Q: 30 Why file sharing is helpful?

Ans: Networking of computers helps a network user to share files. Sharing files with others who are living in a different city or even country is much helpful and is done in the same way.
Example: if all your school teachers want to prepare a combined result using computers, they can share files over a school network or the internet.

Q: 31 Why Hardware sharing is important?

Ans: Hardware sharing is important where less number of printers and scanners than the available computers. Users can share devices such as printers, scanners, CD-ROM drives, hard disk drives etc.

Q: 32 What is the advantages of sharing a single internet connection among different users?

Ans: A single high speed internet connection can be shared with all the users over a network. There is no need to provide a separate internet connection to every user on the network.

Q:33 What is advantages of user communication on networks?

Ans: Networks allow users to communicate using email, newsgroups, and video conferencing etc. So, communication with many people sitting on different locations is possible due to a network.
Example: a video conference comprises the technologies for the reception and transmission of audio - video signals by users at different locations.

Q: 34 What do you mean by storage capacity on network?

Ans: Storage capacity means the limit store data in a computer. If we connect our computer to another computer having more storage, then we can also use the disk space of that computer. In this way, we can store and access files stored remotely.
In this setup, a computer providing the storage is called file server and the computer accessing that space is called a workstation.
Example: we can use services like Drop Box and Google Drive to store our files remotely.

Q: 35 What is data transmission?

Ans: Data transmission is the process of sending data from one device to another. It consists of sender, receiver and the medium which carries the information.

Q: 36 Is a device use multiple channels at the same time?

Ans: Yes, a device may use multiple channels at the same time. For example, if a cell phone is connected with the internet, it uses a data channel (3G 4G LTE) for using the internet services, and a voice channel for calling purpose.

Q: 37 What is Network model?

Ans: Computer network models are responsible for establishing a connection among the sender and receiver. There are two computer network models i.e. OSI Model and TCP IP Model on which the whole data communication process relies.

Q: 38 What are the layers in network models?

Ans: The whole communication process is carried out in different layers, where each layer performs one or more specific tasks. The internet also uses a layered communication model, called the Transmission Control protocol internet protocol (TCP/IP) model.

Q: 39 What is TCP/ IP model?

Ans: The internet also uses a layered communication model, called the transmission control protocol Internet Protocol (TCP IP) model. The TCP IP is a suit of protocols that provides end to end connectivity between devices.

Q: 40 What is application layer?

Ans: It provides network service to user application. It is responsible for exchanging information between programs running on machine. While chatting you are concerned only about the message without bothering about the kind of network, i.e. Wireless or wired. This is called application layer.

Q: 41 What is transport layer?

Ans: A transport layer establishes connection between a client and a server. It tries to send message but there is some error like your computer is disconnected from the network then it informs the application program.

Q: 42 What is Network layer?

Ans: A program running on the network layer moves the data to the other network. So, a chat message is transferred to other Wi-Fi router of your friend from where it is delivered to your friend and he she can see it on screen.

Q: 43 What is data link layer and physical layer?

Ans: Data link layer: data link layer sends a message to the server connected with sender. If you are chatting at home with a Wi-Fi connection, then the data link layer sends message from your computer to the Wi-Fi router.

Physical layer: physical layer is about the physical medium used in communication, like cabling etc.

Q: 44 What is FTP?

Ans: File transfer protocol is the standard TCP IP protocol which is used for the purpose of transferring files from one computer to another. For example, if we want to transfer a document file to a remote computer.

Q: 45 Define HTTP and SMTP?

Ans: HTTP: Hypertext transfer protocol is a protocol used by World Wide Web (WWW) to transfer web pages between a client and a web server. A web server is also called an HTTP server. We use this protocol while browsing internet.
SMTP: Simple mail transfer protocol is a standard protocol to transmit emails.

Q: 46 Why addressing is important in network?
Ans: Before sending a message, source must know the destination address. Devices on a network need addresses in order to communicate with each other. So, giving an address to a message is the first step and the second step is to transmit the packet to its intended recipients.

Q: 47 Why IPv6 have importance than ipv4?
Ans: IPv6 can allow up to 2^{128} address which is 7.9×10^{28} times more than the number of addresses in ipv4.

Q: 48 What is port number?
Ans: If there are more than one applications ready to accept a packet, then a number called port number distinguishes the targeted application from the other applications.

Q: 49 What is IP address?
Ans: IP stands for Internet Protocol. It is a method of identifying each computer on the internet. All IP addresses are unique. Each devices gets its own unique IP address when it's gets connected to the internet. There are two types of IP address.
1- Static IP address
2- Dynamic IP address

Q: 50 Describe sending HTTP requests and receiving HTTP responses over the internet.
Ans: The World Wide Web (WWW) is a system of internet servers. Client send request to the servers, servers serve a request sent by a client. This request is called HTTP request. Servers give response on the request of client. This is called HTTP response. So, the communication between a server and a client is based on requests and their respective responses.

Q: 51 What is web browser?
Ans: A web browser or simply browser is software that allows the internet users to find retrieve, view and send information on the internet. It acts as an interface between the user and the internet.

Q: 52 What are two standard of IP addressing? Give examples.
Ans: An IP address is assigned by a Dynamic Host Configuration Protocol (DHCP) server. There are two standards of IP addressing, i.e., ipv4 and ipv6.
Example:
Ipv4 address is like: 172.16.54.1
Ipv6 address is like: 2001:db8:0:1234:0:567:8:1

Q: 53 What is ipv4 addressing?

Ans: IPv4 address is a 32-bit numbers that uniquely identifies a network interface on a machine. When the Internet Protocol was originally designed, the standard was known as Internet Protocol version 4 (IPv4). Ipv4 is divided in four groups separated by '.'
Example:
IPv4 address is like: 172.16.54.1

Q: 54 What is IPv6 addressing?
Ans: IPv6 address is a 128 bits numbers that uniquely identifies a network interface on a machine. In ipv6, there are 8 groups separated by ":"

Q: 55 What is router?
Ans: Router is intelligent device which routes the data to destination computers. A router is a networking device that forwards data packets from one network to another. They send information from one network to another by selecting the best pathway available.

Q: 56 What is the use of routing table in routing process?
Ans: A routing table is used by routers to determine the path to the destination network. If the entry exists for destination address, the router forwards the packet out of the appropriate interface port. If a router does not find the entry, it discards the packet.

Q: 57 Define header, payload and encapsulation.
Ans: Header: each layer adds some control information called header.
Payload: the actual content of message is called payload.
Encapsulation: the actual content of message called payload, is hidden inside the header at each layer, this is called encapsulation.

Q: 58 What is header of a message?
Ans: Payload is the actual contents of a message whereas the control information contains information about the sender and the receiver. Control information is also called header of a message.

Unit 4: Data and Privacy

Short Questions

Q.1: Define cipher text.
Ans: Encryption is the process of encoding data in such a way that only authorized person can read it. Encoding means conversion of the data to an unreadable format which is called ciphertext.

Q.2: Why do we need an installation key whereas a software can be protected with a password?
Ans: Installation key or product key is a unique, alphanumeric code of any length required by many software programs during installation. They help software developers ensure that each copy of their software was legally purchased. Passwords are used for authentication to enter a system. Password helps to prevent unauthorized people from accessing files, programs and other resources.

Q.3: Define Denial of service.
Ans: In computing, a denial of service attack (DoS attack) is a cyber-attack to make a machine or network resource unavailable to its users.

Q.4: Give a reason to add CAPTCHA on websites.
Ans: CAPTCHA are twisted words which enable or block entries into websites. When you want to post an add, or wish to comment on a blog post, you must have encountered a CAPTCHA. CAPTCHA is just like a gatekeeper controlling your entry and judging whether you are a human or a spamming machine.

Q:5 What is patent, and why do we need to register it?
Ans: Patent is a way to protect an idea. If you are doing research in some field and you have an idea, then you must get patent for that Idea. It gives you the right to exclude others from making or selling an invention using your idea. If we make something on the basis of your idea, we must register for it. Ethically, they must seek your permission before using your idea. They should also pay a certain amount upon the basis of your idea.

Q:6 What do you mean by privacy of data? OR define information privacy.
Ans: Protecting data from malicious users is called data privacy or information privacy.

Q:7 Define piracy.
Ans: Piracy means making illegal copies. It can be a book, software,
Movie, poetry, painting, house architecture or any other work protected by copyright law.

Q:8 Give the name of some data security issues.

Ans: Some of the data security issues are:
Confidentiality & privacy
Fraud & misuse
Patent
Copyright
Trade secrets
Sabotage

Q:9 What do you mean by confidentiality of data? Give one example.
Ans: To keep the data of others as confidential is indeed taking care of others.
For examples, if a bank shares the information about my banking transactions with my business competitors then it can harm my business. Similarly, phone companies are supposed to keep the invoices and bills as confidential. Keeping privacy and confidentiality has become difficult in this era of computers and internet.

Q: 10 What do you mean by software piracy? Or what is key of software?
Ans: Software piracy is the illegal copying, distribution, or uses of software. Some software companies sell software with a confidential text, called the key of that software. This key is provided to only those people who buy that software. In this way illegal copies are stopped to be installed.

Q:11 What is a softlifting and client server overuse?
Ans: Softlifting: borrowing and installing a copy of a software application from a colleague.
Client server overuse: installing more copies of the software than you have licenses for.

Q:12 Define counterfeiting and online piracy.
Ans: Counterfeiting: duplicating and selling software having copyrights.
Online piracy: typically involves downloading illegal software.

Q:13 How fraud and misuse occur using computers over internet?
Ans: Using computers over the internet, some unauthorized activities can take place. Some of these include theft of money by electronic means, theft of services, and theft of valuable data.

Q:14 What do you know about copyright law?
Ans: Copyright law says that some idea or product cannot be copied. The rights are reserved for copying. Software products are mostly copyright protected. It means that we cannot copy them, like MS Windows, MS Office etc.

Q: 15 What is cracking key?
Ans: Software companies sell software with a confidential text, called the key of that software. Some people start searching for that key by using illegal means. This is called cracking the key.

Q:16 What do you know about trade secret?
Ans: Trade secrets play an important role for the success of a company. They have a lot of value and usefulness for the company. For example, there are many free email services but few of them have significant competitive advantage over others.

Q:17 What do you know about sabotage?
Ans: Sabotage is a serious attack on a computer system. Some malicious user can attack the system while setting remotely. One can send virus with some free software.

Q:18 What is computer virus?
Ans: A computer virus may be a program or a set of programs that can cause extensive damage to your computer system. A virus is a computer program written with negative intentions. It can change destroy an information or damage a precious data.

Q:19 What do you mean by integrity and availability?
Ans: Integrity: it means that we want to keep the data correct. For example, we do not want that the website of our Bank shows less account balance than it actually is.
Availability: it means that we want to have access to the data when we want. If data is not available when needed, then in some cases it becomes useless.

Q:20 What do you mean by encryption?
Ans: Encryption is the process of encoding data in such a way that only authorized person can read it. It is important for security of data and keep data private.

Q:21 What is secret code or key?
Ans: Encoding means conversion of the data to an unreadable format which is called ciphertext. A secret code (called key) is required to read the data. A key is just like password.

Q:22 Who is hacker?
Ans: A person who illegally breaks into computer systems to destroy, modify or steal information.

Q:23 Why encryption is important?
Ans: Encryption is important because it allows you to secure data from illegal access. Encryption is one of the most important methods for providing data security.

Q:24 What are the areas where encryption help us to protect our data?
Ans: Importance of encryption can be described in the following three points:
Protection from Hackers.
Encryption protects privacy.
Encryption protects data across devices.

Q:25 Mention the data security aspects during processing, storage and transmission.
Ans: Following are the aspects.
Confidentiality
Integrity
Availability

Q:26 How does encryption help you protection from hackers?

Ans: Encryption helps protect your important information from hackers. Hackers don't just steal information, they can also alter the data to commit fraud.
For example, in a bank transaction of online money transfer, they can fraud by changing the target account number.

Q:27 How does encryption help us to protect our privacy?
Ans: Encryption is used to protect sensitive data, including personal information for individuals. This helps to ensure privacy and minimizing the opportunities for surveillance by criminals.

Q:28 How does encryption help us to protects data across devices?
Ans: Multiple (and mobile) devices are a big part of our lives, and transferring data from device to device is a risky proposition. Encryption Technology can help protect stored data across all devices, even during transfer.

Q:29 What is substitution cipher method?
Ans: Substitution Cipher methods are the methods of encryption in which the characters of original text are replaced by some other characters. This substitution is done by a fixed predefined system.

Q:30 Who was Caesar?
Ans: Caesar was a Roman politician and military general who played a critical role in the Rise of the Roman Empire. Caesar used this method of encryption for sending messages to his soldiers and generals. This is the reason for calling this method as Caesar Cipher.

Q:31 What is Caesar Cipher?
Ans: In this method, we replace each alphabet in the plaintext by another alphabet. The replacing alphabet is some fixed number of steps to the left or right of original alphabet in the sequence of alphabets.

Q:32 What is vigenere cipher?
Ans: Vigenere Cipher is another substitution cipher, which uses a table known as vigenere cipher table for substituting the letters of plaintext.

Q:33 What is frequency analysis method?
Ans: Frequency analysis is the study of the frequency of letters or group of letters in a ciphertext. This method is used as an aid to breaking classical ciphers.

Q:34 What is interim ciphertext?
Ans: If the key has less number of letters, then we repeat the letters of that key from beginning. Example: to encrypt the text "PAKISTAN" having 8 letters with the key "BEAUTY" having 6 letters, we repeat the letters of the key to make them equal in length to the given plaintext. So, the key becomes "BEAUTYBE" having same number of letters and this key is called interim ciphertext.

Q: 35 What are weaknesses and security flaws of substitution ciphers?

Ans: The simplest of all substitution ciphers are those in which the cipher alphabet is merely a cyclical shift of the plaintext alphabet. The explanation for this weakness is that the frequency distributions of symbols in the plaintext and in the ciphertext are identical, only the symbols having been relabeled.
Another major problem with simple substitution ciphers is that the frequencies of letters are not masked at all.

Q:36 What is the use of passwords?
Ans: A password is a string of characters used to verify the identity of a user during the authentication process. Passwords are used for authentication to enter a system.

Q:37 What is the use of cryptographic keys?
Ans: A cryptographic keys is a string of bits used by a cryptographic algorithm to transfer plain text into ciphertext or vice versa. Cryptographic keys are used to read an encrypted message.

Q:38 What is the difference between cryptographic keys and passwords?
Ans: Passwords are used for authentication to enter a system whereas cryptographic keys are used to read an encrypted message.
The basic difference between these two is that a password is generated, read, remembered, and reproduced for a human use while a key is used by the software or human to process a message by using that key and the cryptographic algorithm.

Q:39 Write any two characteristics of a good password.
Ans: A good password should be difficult to guess or crack.
Doesn't contain a complete word.

Q:40 What is cybercrime? Describe its activities.
Ans: A crime in which computer network or Devices are used is called a cybercrime.
Some criminal activities are following:
Identity theft
Transaction fraud
Hacking
Piracy

Q:41 What is hacking?
Ans: Hacking is gaining an unauthorized access to computer or telecommunications systems. The professionals, who do hacking, are called hackers.

Q:42 What is phishing?
Ans: Phishing is the fraudulent attempt to obtain sensitive information such as username, password and credit card details.

Q:43 What do you know about criminal activity of Identity theft?
Ans: One common form of cybercrime is identity theft. Hackers may use fake emails to trap someone to give passwords and account information.

Q:44 What do you know about criminal activity of transaction fraud?

Ans: A scammer may offer an item for sale through an auction site with no intention of delivering once he she receives payment. Alternatively, a criminal might purchase an item for sale using a stolen credit card.

Q:45 What do you know about encoding?

Ans: Encoding means conversion of the data to an unreadable format which is called ciphertext.

Q:46 What is the use of cookies?

Ans: Companies want to read Minds of Web Surfers and sometimes they store some piece of information with the Web server, called cookies. Using "cookies", companies are able to track purchases and gather personal data. They can use this information to target their marketing.

Q:47 What do you mean by computerized system?

Ans: Computerized system is a system that includes software, hardware, application software, operating system software, supporting documentation, e.g. automated laboratory system, monitoring database system.

Unit 5: Designing Website

Short Questions

Q:1 Differentiate between ordered and unordered list.

Ans:

Ordered list: in an ordered list all the items of the list start with a number and the numbers are in ascending order. The < ol> tags are used for creating an ordered list and each item of the list is surrounded with < li> tags.

Unordered list: in an unordered list each item of the list generally starts with a bullet. Unordered means the list items are not having a number.

The < ul> tags are used for creating and unordered lists and each item of the list is surrounded with tags.

Q:2 What is the difference between hyperlink and anchor?

Ans:

Hyperlink: hyperlink is such an icon, graphic, or text in a webpage, when clicked takes you to some other webpage. Hyperlink allow you to go from one page to another page.

Anchor: anchor links allow you to go from one part of the same page to another part. Anchor with a name attribute is used to create a hyperlink within a Web page. The <a>< a> tag is known as anchor.

Q:3 What do you know about HTML?

Ans: HTML stands for hypertext markup language. It is used to create web pages. A browser such as Internet Explorer or Google Chrome is used to read HTML document and display it on the screen as Web pages. It is used to create hypertext documents that bring together text, pictures, sounds, video clips and links all in one place. HTML files are plain text files, so they can be created using a simple editor such as Notepad or wordpad.

Q:4 What are two important terms that you need to understand in the name HTML?

Ans: There are two important terms that you need to understand in the name HTML.

- Hypertext
- Markup language

Q:5 What do you mean by markup language?

Ans: Markup is what HTML tags do to the text inside them. A webpage consists of a series of elements which are represented by tags.

Example: <p> I am 9th class student < p>

Here <p> shows marking of paragraph opening tag and < p> means marking of paragraph closing tag.

Q:6 Define hypertext.

Ans: The term hypertext is used due to the special text in a webpage called hyperlinks. By clicking on these links you can move from one webpage to another. Hyperlinks are used to navigate on the World Wide Web (WWW).

Q:7 What are HTML tags?

Ans: HTML tags are commands or codes that specifies how a Web page is formatted.

Q:8 What is the role of HTML?

Ans: HTML tells the browser how the contents are structured inside a webpage. When you send request to a web server through a web browser to access a webpage, you get HTML as a response from there. The web browser understands the HTML and displays contents of the webpage.

Q:9 Name the types of lists in HTML.

Ans: These are following three types of lists in HTML.

1- Unordered list

2- Order the list

3- Definition list (Description list)

Q:10 What is the use of hyperlinks?

Ans: Hyperlinks are used to navigate on the World Wide Web (WWW). Hyperlink is such an icon, graphic, or text in a web page, that when clicked takes you to some other web page. The term hypertext is used due to the special text in a webpage called hyperlinks.

Q:11 describe HTML elements and element content.

Ans: HTML elements: HTML document consists of text, files that contain HTML elements. HTML elements are defined using HTML tags. HTML tags are surrounded by the two characters:

< and > and generally they come in pairs, such as <head> </head>. Some HTML have no content are called empty elements. Empty element do not have an end tag, such as
 element.

Element content: the text between these two tags is known as element content.

Q:12 How we create Webpage using HTML?

Ans: to create a webpage, you need a text editor, a software to edit text in a file. You can use Notepad and in Mac you use Text Edit. You can follow these four steps to create your first webpage.

1. Open Text Editor like notepad or WordPad.
2. Write some HTML content.
3. Save the HTML page with extension .htm or .html
4. In order to view your first webpage, just double click the HTML file web browser is automatically opened to show your webpage.

Q:13 How many types of tags are in an HTML?

Ans: there are two types of tags in an HTML document.

1. Paired tags
2. Singular tags

Q:14 What is the difference between paired tags and singular tags (empty tag)?

Ans:

Paired tags

Most of the tags in HTML are paired tags. They consist of a start tag, an end tag and contents between them.

Syntax: <tagname> Contents < tagname>

Example: for example, tag p to create a paragraph in HTML document is a paired tag.

<p> LAHORE < p>

Singular tags (empty tag)

Some tags do not have closing tags and they are called singular tags or empty tags. They are simply written as <tagname>.

Example: for example,
 for line break, <hr> to insert a horizontal line.

Q:15 What are attributes in HTML?

Ans: Attributes are the properties associated with tags. They provide some information with respect to a specific tag. Each attribute is given a value.

Generally, a tag with attributes is written as:

<tagname attribute1 = "value" attribute2 = "value" ..... attributeN = "value">

Example: for example, <p align = "center"> Content < p> shows the content of a paragraph at center with respect to left and right margins.

Q:16 Define HTML and body tags.

Ans: **HTML:** the first tag in the html document is <html> that indicates the start of the HTML document. The last tag is </html> indicates that is the end of the HTML document.

Syntax: <html> < html>

Body section: anything typed inside the body tags will be displayed in the browser window. The visible part of the HTML document is between <body> and < body>.

Syntax: <body> </body>

Q:17 What do you know about head section of HTML document?

Ans: head section typically defines the document title, styles and other information about the whole document. Head section starts with <head> tag and ends with < head>

Syntax: <head> < head>

Q:18 How do we specify a Page Title?

Ans: To specify title of the webpage, you use <title> tag inside <head> < head> tags. The text between these tags is used to set the title to the page. It is displayed on the title bar of the Web browser.

Syntax: <title> < title>

Example: <title>First HTML Document< title> will display First HTML Document, on the title bar of the Web browser.

Q:19 How we create paragraph and Inserting Line breaks by using HTML?

Ans:

Creating A Paragraph: the tag marks starting of a paragraph, and tag marks closing of the paragraph. The text inside   tags is actual contents of the paragraph.

Syntax:

Inserting Line Breaks: the
 element inserts a line break without starting a new paragraph.

Syntax:

Example: this is
 a paragraph displays text in two lines, as following:

This is
a paragraph.

Q:20 How we insert spaces and add headings/sub-headings by using HTML?

Ans:

Inserting spaces: if the user wants to have many spaces in a HTML document then the   character entity must be used.

Syntax:

Example: for example, I study   in 9th class. generates the following output.

I study in 9th class.

Add Heading/sub-heading: there are six headings tags, <h1></h1> to <h6></h6>. The <h1></h1> tags are used to specify the largest heading and <h6></h6> tags specify the smallest.

Q:21 What is text formatting? And how we bold the text.

Ans: Text formatting tags are used to format the text in HTML document. Some commonly used text formatting tags are described below.

Bold the text: tags will make the text bold that is within the tags.

Syntax:

Example: I LOVE PAKISTAN

Q:22 How can you underline and italic the text by using HTML tags?

Ans:

Underline The Text: <u></u> tags will underline the text that is within the tags.

Syntax: <u></u>

Example: <u> I LOVE PAKISTAN </u>

Italic the text tags are used to make the text italic that is within the tags.

Syntax:

Example: I LOVE PAKISTAN

Q:23 Describe font size and font color and font face tags in HTML.

Ans:

Font size: size attribute of tag is used to change the font size of text.

Syntax:

Replace the ? Symbol with a number in the range 1 to 7. 1 is the smallest and 7 is the largest font size.

Example : WORLD WIDE WEB

Font color: color attribute of tag is used to change the font color of text.
Syntax:
Replace the ? Symbol with color such as black, blue brown, gray, green, maroon, orange, pink, red etc.
Example: WORLD WIDE WEB
Font Face: Face tag of tag is used to change the font face of text.
Syntax:
Replace the ? Symbol with font face such as arial, courier, Calibri, Times new roman, etc.
Example: WORLD WIDE WEB

Q:24 Describe Nested List.
Ans: Nested list means a list within another list. We can create a nested unordered list within another unordered list. Any combination of ordered or unordered lists can be used for creating nested lists.

Q:25 Describe definition list or description list.
Ans: Definition list is used to define terms. It is not a list of items. It is a list of terms with their explanations. A definition list is created using <dl></dl>, <dt></dt> and <dd></dd> tags.
<dl></dl>: These tags are used to define a definition list.
<dt></dt>: These tags are used to define each term of definition list.
<dd></dd>: These tags are used to explain each term of definition list.

Q:26 Which tag is used for adding image?
Ans:
<img> it is the HTML tag that inserts an image in a Web page. It has attributes but not closing tag.
Src attribute: src stands for source. It tells the browser where the image is located.
Example: <img src="image.jpg">

Q:27 How do we set Border attribute?
Ans: A border can be set around an image using the Border attribute in the <img> tag. Border is a box of lines that is around the boundary of an image.
Example: <img src="image.jpg" border="5"> Here, the number 5 specifies the width of the border in pixels.

Q:28 How do we set height attribute?
Ans: Height attribute is inserted in the <img> tag to specify the height of the image in pixels. This can be different than the real height of the image. The browser resizes the images as specified in the <img> tag.
Example: <img src="image.jpg" height="200">

Q:29 How do we set width attribute?
Ans: Width attribute is inserted in the <img> tag to specify the width of the image in pixels. This can be different than the real width of the image. The browser resizes the image as specified in the <img> tag.
Example: <img src="image.jpg" width="200">

Q:30 What is the purpose of alt attribute?
Ans: If for some reason the browser cannot display an image, the user can insert the **alt** attribute in the <img> tag to tell the reader what image is missing in the page. The value of the **alt** attribute provides alternative text in place of image in the Web page.

Q:31 What is anchor tags?
Ans: The <a> tag is known as anchor. It is used to create a hyperlink which may be text or image, with the **href** attribute.
Syntax: text to be displayed

Q:32 How to create a graphical hyperlink to another web page?
Ans: **Syntax**: <img src= "name of image file with extension">
Example: <img src= "image.jpg">

Q:33 How do we apply background image in a Web page?
Ans: An image can be set as background of a page using the background attribute in the <body> tag.
Example: <body background= "image.jpg">

Q:34 How do we set background and foreground colors of the webpage?
Ans: The bgcolor attribute of <body> tag specifies the background color of a document and text attribute specifies the foreground text color of the webpage.
Example:
```
<body bgcolor=”#E6E6FA” text= “red”>
<h1>Hello world!</h1>
</body>
```

Q:35 How do we create hyperlink to another webpage?
Ans: The <a> tag is known as anchor. It is used to create a hyperlink which maybe text or image, with the **href** attribute.
The **href** attribute is used to specify the URL of the linked webpage.
Syntax: text to be displayed
Examples: Visit www.google.com
Makes the text "Visit www.google.com" a hyperlink. If you click on this text in the webpage, it takes you to the website www.google.com.

Q:36 How do we create hyperlink within a webpage?
Ans: It involves two steps, creating the anchor itself and then creating a hyperlink to the anchor.
Create the label in the anchor tag at the location in the page where you want to hyperlink.
Syntax:
The user can make a hyperlink to the Anchor using normal <a> tag with the **href** attribute.
Syntax: text to be displayed
The # symbol must be put before the label.

Q:37 which tag is used for table?
Ans: <table></table> tags are used for table.

Q:38 what do you mean by colspan and rowspan?

Ans:

Colspan: to make a cell span more than one columns, colspan attribute is used. Tag used for columns to span is <th colspan="?">

Example: <th>Name</th><th>th colspan= 2 >Telephone</th>

Rowspan: to make a cells span more than one row, rowspan attribute is used. Tag used for row to span is <th rowspan="?">

Example: <th rowspan = "2">Telephone:</th>

Q:39 What is metadata?

Ans: Metadata is Data (information) about data. Metadata will not be displayed on the page, but will be machine parsable.